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## Pub. Date Int. Class App. No.

1. (WO 2007/008422) ELECTROCHEMICAL CELL HAVING A PARTIALLY OXIDIZED CONDUCTOR

18.01.2007 H01M 2/02 PCT/  
US2006

An electrochemical cell having an aqueous electrolyte and an **electrode** with partially **oxidized** graphite mixed with an electrochemically active material. The **graphite** is **oxidized** on its surface and within a specified range of surface oxidation to improve the aqueous electrolyte's ability to oxidize organic compounds. The weight ratio of active material to graphite is maximized to improve performance on high drains tests.

2. (WO 2005/040343) IMPROVED APPARATUS AND METHOD FOR IDENTIFICATION OF BIOMOLECULES, IN PARTICULAR NUCLEIC ACID SEQUENCES, PROTEINS, AND ANTIGENS AND ANTIBODIES

06.05.2005 G01N 15/06 PCT/  
US2004

An electrical detection system and method using an array of conductive sense sites within a sensing substrate for electrically detecting a hybridization or binding reaction between two chemical substances, particularly between biogenic substances such as nucleic acids, proteins, antigens and antibodies. The method and apparatus provide a an inexpensive, robust, small, repeatable, and intuitively easy to use system for detecting high or low levels of hybridization with large numbers of closely spaced conductive sense sites within a single substrate.

3. (WO 2005/024487) PROGRAMMABLE OPTICAL COMPONENT FOR SPATIALLY CONTROLLING THE INTENSITY OF BEAM OF RADIATION

17.03.2005 G02B 26/08 PCT/  
JP2004

A programmable optical component (10) for spatially controlling the intensity of a beam of radiation (b), which component comprises a substrate (12) which is divided in programmable elements (4,6,8), characterized in that each programmable element comprises bendable nano-elements (5) switchable between a **non-bend** state (5') and a bend state (5'') by means of a driver field. In their bend state the nano-elements of a programmable element may be a switchable diffraction grating or a programmable mask.

4. (WO 2005/010891) FERROELECTRIC AND HIGH DIELECTRIC CONSTANT INTEGRATED CIRCUIT CAPACITORS WITH THREE-DIMENSIONAL ORIENTATION FOR HIGH DENSITY MEMORIES, AND METHOD OF MAKING THE SAME

09.02.2005 G11C 11/22 PCT/  
US2004

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the PCT

A three-dimensional ("3-D") memory capacitor comprises a bottom **electrode**, a ferroelectric thin film, and a top **electrode** that covers the bottom **electrode** and the ferroelectric thin film. The capacitor is formed on an insulator layer. The capacitance area is greater than the horizontal footprint area of the capacitor. Preferably, the footprint of the capacitor is greater than 1.0 nm<sup>2</sup>, and the corresponding capacitance area is typically in a range of from 0.4 nm<sup>2</sup> to 1.0 nm<sup>2</sup>. The ferroelectric thin film preferably has a thickness exceeding 60 nm. A capacitor laminate including the bottom **electrode**, ferroelectric thin film, and the top **electrode** preferably has a thickness exceeding 200 nm. A low-thermal-budget MOCVD method for depositing a ferroelectric thin film having a thickness in a range of from 60 nm to 200 nm is also disclosed.

5. (WO 2004/095607) **ELECTRODES COMPRISING MIXED ACTIVE PARTICLES**

04.11.2004 H01B 1/08 PCT/  
US2004

**Electrode** active materials comprising two or more groups of particles having differing chemical compositions, wherein each group is selected from: (a) materials of the formula A<sub>1-x</sub>M<sub>1-y</sub>(XY<sub>4</sub>)<sub>z</sub>Z<sub>d</sub>; and (b) materials of the formula A<sub>2-x</sub>M<sub>2-y</sub>(Og)<sub>z</sub>; and wherein (i) A is Al, Ga, or In; (ii) M<sub>1</sub> and M<sub>2</sub> comprise a transition metal; (iii) XY<sub>4</sub> is a phosphate or similar moiety; and (iv) Z is OH, or halogen. In a preferred embodiment, the materials are A<sub>3</sub>hMn<sub>1-x</sub>O<sub>4</sub> having an inner and an outer region, wherein the inner region comprises a cubic spinel manganese oxide, and the outer region comprises a manganese oxide enriched in Mn<sup>4+</sup> relative to the inner region. In a preferred embodiment, the compositions also comprise a base material.

6. (WO 2004/066307) **STACKED MEMORY CELL HAVING DIFFUSION BARRIERS**

05.08.2004 H01L 21/02 PCT/  
US2004

A bottom **electrode** (238) and portion of an insulator layer (224) adjacent to the bottom **electrode** of a memory capacitor (540) are formed on a sidewall (440) and a moat region (450) in the insulator. A nonconductive oxygen barrier layer (460) is deposited to cover the sidewall (440) and the moat region (450). The nonconductive oxygen barrier layer and a conductive diffusion barrier (444, 236) beneath the capacitor together provide a diffusion barrier between the capacitor and a switch (208). A nonconductive hydrogen barrier layer (508), the nonconductive oxygen barrier layer (460), and the conductive diffusion barrier (444, 236) substantially completely envelop the capacitor, in particular a ferroelectric thin film (490) in the capacitor.

7. (WO 2004/049441) **LOW THERMAL BUDGET FABRICATION OF FERROELECTRIC MEMORY USING RTP**

10.06.2004 C30B 29/32 PCT/  
US2003

A layered superlattice material precursor is applied to a substrate (102). The precursor coating is rapid thermal processed (RTP) at a temperature in a range of from 500 °C to 900 °C for a cumulative heating time not exceeding 30 minutes, and preferably not exceeding 10 minutes. In fabricating a ferroelectric memory cell (100), the coating is heated in oxygen using RTP, then a top **electrode** layer (104) is formed on the substrate including the coating is heated using RTP in oxygen or in nonreactive gas after forming the top **electrode** layer. The top **electrode** layer has a thickness in a range of from 25 nm to 120 nm. The process typically has a thermal budget value not exceeding 9600 J/cm<sup>2</sup>.

8. (WO 2003/099715) **SYNTHESIS OF METAL COMPOUNDS USEFUL AS CATHODE ACTIVE MATERIALS**

04.12.2003 C01B 13/14 PCT/  
US2003

Active materials of the invention contain at least one alkali metal and at least one other metal capable of being **oxidized** to a higher oxidation state. The other metals are accordingly selected from the group consisting of transition metals (defined as Groups 4-11 of the periodic table) and **non-transition** materials such as tin, bismuth, and lead. The active materials may be synthesized in single step reactions or in multiple steps. In one of the steps of the synthesis reaction, reducing carbon is used as a starting material. In one aspect, the reducing carbon is pyrolytic carbon, preferably in particulate form such as graphites, amorphous carbon, carbon blacks and the like. In another aspect, the reducing carbon is a gas.

9. (WO 2003/085771) **ALKALI-IRON-COBALT PHOSPHATES AND RELATED ELECTRODE ACTIVE MATERIALS**

16.10.2003 C01B 25/45 PCT/  
US2003

**Electrode** active materials, preferably having an olivine structure, of the formula: A<sub>2</sub>M<sub>2</sub>XY<sub>4</sub> wherein (a) A is one or more alkali metals, 0 < a ≤ 2; (b) M is one or more metals, comprising Co and Fe, 0 < b ≤ 2; and (c) XY<sub>4</sub> is X'O 4-xY'<sub>x</sub>X'O<sub>4-y</sub>Y'<sub>2y</sub>, X'S<sub>4</sub>, or a mixture thereof; X' is Si, Ge, V, S, or a mixture thereof; Y' is P, As, Sb, Bi, Ge, V, or a mixture thereof; Y' is halogen, S, N, or a mixture thereof; 0 ≤ x < 0.8 ≤ a ≤ 1.2, and 0.9 ≤ b ≤ 1. In a preferred embodiment, M further comprises one or more **non-transition** elements. Also provided are batteries comprising an **electrode** active material of this invention.

10. (WO 2003/049172) LANTHANIDE SERIES LAYERED SUPERLATTICE MATERIALS FOR INTEGRATED CIRCUIT APPLICATIONS 12.06.2003 H01L 21/02 PCT/US2002

An integrated circuit (40) includes a layered superlattice material (57) including one or more of the elements cerium, praseodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, and lutetium. These elements or superlattice generator elements in the layered superlattice material. In one embodiment, one or more of these elements is a bismuth layered material. They also are preferably used in combination with one or more of the following elements: strontium, calcium, lead, titanium, tantalum, niobium, tungsten, molybdenum, zirconium, osmium, scandium, yttrium, lanthanum, antimony, chromium,

11. (WO 2003/023380) ASSAY BUFFER, COMPOSITIONS CONTAINING THE SAME, AND METHODS OF USING THE SAME 20.03.2003 C12Q 1/48 PCT/US2002

Compositions, reagents, kits, systems, system components, and methods for performing assays. More particularly, the invention relates to combinations of reagents to provide improved assay performance.

12. (WO 2003/023365) ELECTROCHEMICAL SENSOR USING INTERCALATIVE, REDOX-ACTIVE MOIETIES 20.03.2003 C12N 15/09 PCT/US2002

Compositions and methods for electrochemical detection and localization of genetic point mutations, common DNA lesions and other perturbations within oligonucleotide duplexes adsorbed onto **electrodes** and their use in biosensing technologies are described. An active moiety (such as an intercalator or nucleic acid-binding protein) is adhered and/or crosslinked to immobilized DNA duplexes. The active moiety is removed from an **electrode** and probed electrochemically in the presence or absence of a **non**-intercalative, redox-active moiety. Interruption of electron-transfer caused by base-stacking perturbations, such as mutations or binding of a protein to its recognition site are referred to as

13. (WO 2003/017353) PROVIDING PHOTONIC CONTROL OVER WAFER BORNE SEMICONDUCTOR DEVICES 27.02.2003 G01R 31/27 PCT/US2002

Disclosed are methods for providing wafer photonic flow control to a semiconductor wafer (1700) having a substrate (1720), at least one surface layer (1710) and at least one surface layer (1710). Photonic flow control can be achieved through the formation of trenches (1725) and/or insulating layers (1730) formed in said wafer (1700), whereby active regions (1760) are defined by trenches (1725) that operate as nonconductive areas. Methods and systems for wafer level burn-in (WLB) of semiconductor devices are also disclosed. Photonic flow control at the wafer level is important when using WLB methods and systems.

14. (WO 2003/017352) PROVIDING CURRENT CONTROL OVER WAFER BORNE SEMICONDUCTOR DEVICES USING OVERLAYER PATTERNS 27.02.2003 G01R 31/27 PCT/US2002

Disclosed are methods for providing wafer parasitic current control to a semiconductor wafer (1240) having a substrate (1240), at least one surface layer (1240) and at least one surface layer (1240). Current control can be achieved through the formation of patterns (1240) surrounding active regions (1260) including insulating implants and/or sacrificial layers formed between active devices represented by said contacts (1215) through active regions (1260) associated with said contacts (1215) and active devices. Methods of and systems for wafer level burn-in (WLB) of semiconductor devices are also disclosed. Current control at the wafer level is important when using WLB methods and systems.

15. (WO 2003/017325) PROVIDING CURRENT CONTROL OVER WAFER BORNE SEMICONDUCTOR DEVICES USING TRENCHES 27.02.2003 G01R 31/27 PCT/US2002

Disclosed are methods for providing wafer parasitic current control to a semiconductor wafer (1500) having a substrate (1520), at least one surface layer (1565) and a surface layer (1510), and electrical contacts (1515) formed on said surface layer (1510). Current control can be achieved through the formation of trenches (1525) around electrical contacts, where electrical contacts and associated layers define an electronic device. Insulating layers (1540) placed into trenches (1525) and/or sacrificial layers (1540) can be formed between electronic contacts (1515). Trenches control current flow

16. (WO 2003/003498) HYDROGEN STORAGE BATTERY: POSITIVE NICKEL ELECTRODE: 09.01.2003 H01M 4/26 PCT/  
POSITIVE ELECTRODE ACTIVE MATERIAL AND METHODS FOR MAKING US2002

A hydrogen storage battery with improved cycle life and a method for making the same. The battery has a negative **electrode** with active negative material and a negative **electrode** capacity and a positive **electrode** electrochemically coupled with the negative **electrode** having a positive **electrode** capacity and an electrochemically active positive material with a precharge. Also describe **electrode** material for a hydrogen storage battery and a method for making the same. The positive **electrode** material includes a material which is partially **non-oxidized**. The preoxidized material may be used to provide a precharge to the positive **electrode**.

17. (WO 2002/091473) FERROELECTRIC COMPOSITE MATERIAL, METHOD OF MAKING 14.11.2002 H01L PCT/  
SAME AND MEMORY UTILIZING SAME 21/02 US2002

A ferroelectric memory (436) includes a plurality of memory cells (73, 82, 100) each containing a ferroelectric thin film (15) including a composite material having a ferroelectric component (13) and a dielectric component (19), the dielectric component being a different material than the ferroelectric component. The dielectric component is preferably a fluxor, i.e., a material having a higher crystallization velocity than the ferroelectric component. The addition of the fluxor permits a ferroelectric thin film to be crystallized at a temperature of between 400 °C and 500 °C.

18. (WO 2002/073680) METHOD OF MAKING LAYERED SUPERLATTICE MATERIAL WITH 19.09.2002 H01L PCT/  
ULTRA-THIN TOP LAYER 21/02 US2002

In the manufacture of an integrated circuit memory cell, a strontium bismuth tantalate or strontium bismuth tantalum niobate thin film is deposited on a substrate (28, 49) and a carefully controlled UV baking process is performed on the strontium bismuth tantalate layer (50) to form an ultra-thin bismuth tantalate layer (51). A second **electrode** (52) is formed on top of the ultra-thin bismuth tantalate layer (51).

19. (WO 2002/073669) METHOD OF MAKING LAYERED SUPERLATTICE MATERIAL WITH 19.09.2002 H01L PCT/  
IMPROVED MICROSTRUCTURE 21/02 US2001

In the manufacture of an integrated circuit, a first **electrode** (48) is formed on a substrate (28). In a first embodiment, a strontium bismuth tantalate layer (50) and a second **electrode** (52) are formed on top of the first **electrode** (48). Prior to the final crystallization anneal, the first **electrode** (48) and the second **electrode** (52) are patterned. The final crystallization anneal is then performed on the first **electrode** (48) and the second **electrode** (52). In a second embodiment, a second layer (132) of strontium bismuth tantalate is deposited on top of the strontium bismuth tantalate layer (50). In a third embodiment, a carefully controlled UV baking process is performed on the second **electrode** (52) on top of the first and second layers (50), (132).

20. (WO 2002/065536) RAPID-TEMPERATURE PULSING ANNEAL METHOD AT LOW 22.08.2002 C23C PCT/  
TEMPERATURE FOR FABRICATING LAYERED SUPERLATTICE MATERIALS AND 18/12 US2001  
MAKING ELECTRONIC DEVICES INCLUDING SAME

A liquid precursor for forming a layered superlattice material (124, 226, 610) is applied (324) to an integrated circuit substrate. The material is annealed in oxygen using a rapid-temperature pulsing anneal ('RPA') technique with a ramp rate of 30 °C/second at a hold temperature of 30 minutes. The RPA technique includes applying a plurality (330, 340) of rapid-temperature heat pulses in sequence.

21. (WO 2002/004887) METHODS AND APPARATUS FOR PROCESSING 17.01.2002 H01L PCT/  
MICROELECTRONIC WORKPIECES USING METROLOGY 21/00 US2001

A method and apparatus for processing a microelectronic workpiece using metrology. The apparatus can include one or more processing units (228), and a control unit (270) coupled to the metrology unit and at least one of the processing or transport units. The control unit can include a process recipe or a process sequence of the processing unit based on a feed forward or a feed back signal from the metrology unit. The control unit can include, a seed layer disposition unit, a process layer electrochemical disposition unit, a seed layer enhancement layer (232), a polishing unit, and/or an annealing chamber arranged for sequential processing of a workpiece. The processing units can be controlled by the control unit.

22. (WO 2001/076771) LOW TEMPERATURE OXIDIZING METHOD OF MAKING A LAYERED SUPERLATTICE MATERIAL18.10.2001C30B 7/00PCT/US2001

A thin film of precursor for forming a layered superlattice material (124, 226, 624) is applied (324, 424) to an integrated circuit substrate, then a strong oxidizing agent is applied (328, 330, 426, 428) at low temperature in a range of from 100° C to 300° C to the precursor to form a metal oxide thin film. The strong oxidizing agent may be liquid or gaseous. An example of a liquid strong oxidizing agent is hydrogen peroxide. An example of a gaseous strong oxidizing agent is ozone. The metal oxide thin film is crystallized by annealing (336, 338, 432, 434) in a range of from 500° C to 700° C, preferably not exceeding 650° C, for a time period in a range of from 30 minutes...

23. (WO 2001/067516) RAPID RAMPING ANNEAL METHOD FOR FABRICATING SUPERLATTICE MATERIALS13.09.2001C30B 7/00PCT/US2001

A liquid precursor for forming a layered superlattice material is applied (324) to an integrated circuit substrate (122, 224, 508). The substrate is annealed in oxygen using a rapid ramping anneal ('RRA') technique (328) with a ramping rate of 50 °C/second at a hold temperature of 30 minutes.

24. (WO 2001/066834) CHEMICAL VAPOR DEPOSITION PROCESS FOR FABRICATING LAYERED SUPERLATTICE MATERIALS13.09.2001C29C 16/02PCT/US2001

A first reactant gas is flowed (310) into a CVD reaction chamber (430) containing a heated integrated circuit substrate. The first reactant gas is a precursor compound or a plurality of first precursor compounds, and the first precursor compound or compounds decompose in the chamber to deposit a coating containing metal atoms on the heated integrated circuit substrate. The coating is treated (312) by RTP. Thereafter, a second reactant gas is flowed (316) into a CVD reaction chamber (430) containing the heated substrate. The second reactant gas contains a second precursor compound or a plurality of second precursor compounds, which decompose in the CVD reaction chamber to deposit more metal atoms on the substrate.

25. (WO 2001/024237) INTEGRATED CIRCUITS WITH BARRIER LAYERS AND METHODS OF FABRICATING SAME05.04.2001H01L 21/02PCT/US2000

A hydrogen diffusion barrier (132, 124, 332, 324, 432, 424, 532, 524, 720, 710, 750, 770, 912) in an integrated circuit (100, 200, 900) is located to inhibit diffusion of hydrogen towards a dielectric thin film (128, 326, 428, 528, 711, 764, 908) of metal oxide material. The diffusion barrier comprises at least one of the following oxides: tantalum pentoxide; tungsten oxide; aluminum oxide; titanium oxide; ferroelectric or high-dielectric, nonferroelectric material. Preferably, the metal oxide comprises ferroelectric layered superlattice material. The diffusion barrier layer may be a single continuous layer (132) completely overlying a common plate electrode and the dielectric layer.

Final 14 records

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Search Summary

non NEAR oxidized: 2978 occurrences in 1070 records.  
non NEAR electrode\*: 12954 occurrences in 4729 records.  
(non NEAR oxidized AND non NEAR electrode\*): 39 records.

Search Time: 7.82 seconds.

